FINANCIAL SECRETARIAT.

No. Fl. 5149—*Ex.* 18-25-16, *dated* 21*st December* 1927.

DENATURED SPIRITS RULES.

Under Sections 6, 7, 11, 12, 13, 15, 24 and 29 (*o*), (*p*) and (*q*) of the Mysore Excise ...lation, V of 1901, as amended by Regulations IV of 1902, V of 1906, VIII of 1913 and ...920, the Government of His Highness the Maharaja of Mysore are pleased to issue ...lowing revised rules for the control of the preparation, possession and sale of Dena... spirits in the Mysore State in supersession of the rules contained in Notification ...o. R. 3440-Ex. 20-21-8, dated 20th January 1922. These rules will come into force a month after the date of publication.

1. *Definition.*—Denatured spirit means spirit subjected to a process prescribed by the Government by notification for the purpose of rendering it unfit for human consumption. The process prescribed for ordinary denatured spirit in the Mysore State is the admixture with 90 per cent of proof spirit, 9·5 per cent of wood-naptha or Mether alcohol together with ·5 per cent of Pyridine bases. The wood-naptha and the pyridine bases must answer the laboratory tests described in Appendix I. Methylated spirit means denatured spirit rendered effectually unfit for human consumption by the admixture of crude wood-naptha in the proportion of one part of crude wood-naptha to nine parts of spirit. The use of crude wood-naptha in a highly purified condition is not permitted.

2. *Duty.*—Denatured spirit manufactured in, and issued from the Government Central Distillery, Bangalore, shall not be liable to any duty. Duty is not also leviable on exports and imports of denatured spirit by land.

3. *Manufacture.*—Denatured spirit may be manufactured at the Government Central Distillery at Bangalore, provided—

(1) that the wood-naptha and pyridine bases to be mixed with the spirit are first tested and approved by the Chemical Examiner to Government, or by the Excise Commissioner,

(2) that they are kept under lock and key by, and used under the supervision of the Distillery Officer,

(3) that they are used in the proportion prescribed and in the manner defined in Rule I and Appendix I to these rules. Previous sanction of Government must be obtained for the employment of special methods of denaturation for spirit intended for use in particular arts and manufactures.

4. *Import.*—Denatured spirit may be imported with the previous permission of the Deputy Commissioner, provided that the spirit to be imported has been fully denatured, provided also that such spirit is transported from the frontier to its destination under cover of a permit in Form D. S. 4. A certificate from the Collector of Customs at the place of import or from the Chemical Examiner to the Government of Mysore to the effect that the spirit to be imported has been fully denatured, may be accepted.

Spirit which it is proposed to import if not sufficiently denatured must either be denatured afresh at the expense of the importer or it must pay the prevailing rate of duty on potable spirit. Methylated spirit may be imported only with the special sanction of Government.

The import of quantities within the limits of private possession is not covered by these restrictions.

5. *Export.*—Denatured spirit may be exported by holders of D. S. 1 licenses in the State to places outside the State under a permit in Form D. S. 4 granted by the Deputy Commissioner of the District of export, provided that the exporter produces before the Deputy Commissioner a permit authorising the import from the Excise authorities of the District to which the spirit is to be exported.

6. *Retail License.*—Licenses (D. S. 1) for the sale of denatured spirit will be issued by the Deputy Commissioner free of fee to respectable applicants on their showing that they have a legitimate demand for such spirit. All such applications should be forwarded to the Excise Commissioner, through the Deputy Commissioner of the District in which the applicant wishes to hold his license. But the issue of licenses to persons licensed to sell liquor for consumption on the premises is prohibited.

7. *Licenses to Varnish-Makers and others.*—Licenses in Form D. S. 2 may be granted by the Deputy Commissioner of the District with the previous permission of the Excise Commissioner to varnish makers and others for possession of denatured spirit in such quantities as the Deputy Commissioner may determine on consideration of their reasonable requirements for use in their business but not for sale.

8. *Licenses to Chemists and Druggists.*—Licenses in Form D. S. 3 will be granted by the Deputy Commissioner of the District with the previous permission of the Excise Commissioner to Chemists and Druggists who for special reason requires Methylated Spirit.

9. *Limit of Possession.*—The quantity prescribed as the limit of private possession of denatured spirit is one imperial gallon. The limit of possession of Methylated spirit is one reputed Quart.

10. *Permits for transport.*—No denatured spirit shall be transported in quantities exceeding one imperial gallon except under a pass in Form D. S. 4.

11. *Supplies from Depots.*—The holders of licenses may obtain their supplies of denatured spirits from any Bonded Depot on payment into a Taluk Treasury on the prescribed challan of such price and cost of carriage as may be prescribed from time to time.

12. *General conditions applicable to all Licenses.*—(1) No shop for the vend or storage of denatured spirit shall be located in the same building with any shop for the sale of intoxicating liquor for consumption on the premises.

(ii) The license must be hung up in a conspicuous place within the shop.

(iii) No shop shall be kept open between the hours of 9 P.M. and 6 A.M.

(iv) Denatured spirit kept for sale shall be of good quality and unadulterated. Any attempt to render such spirit fit for human consumption is punishable under Section 55A of the Mysore Excise Regulation. Should any Inspecting Officer be of opinion that any spirit found by him on inspection is insufficiently denatured he shall report the matter to the Deputy Commissioner and may at the time of inspection remove the spirit in question or cause the receptacle to be sealed and submit a sample to the Chemical Examiner for analysis and report. If the analysis shows that it is insufficiently denatured the spirit shall be at once treated afresh or, failing this, destroyed.

(v) True accounts of transactions shall be maintained from day to day in ink in Form D. S. 5 by the holders of licenses. The accounts and permits shall be in printed books which may be obtained from the local Excise Officers on payment of cost price. The permits received shall be preserved for one year after the period covered by the license and shall be produced when called for by any officer not below the rank of an Excise Assistant Inspector.

(vi) No privilege of storage or vend shall be sold, transferred or sub-rented without the Excise Commissioner's previous permission. Nor if the Deputy Commissioner so orders, shall any agent be appointed for the management of any such privilege without his previous approval.

(vii) With the sanction of the Excise Commissioner any license shall be revocable by the Deputy Commissioner on giving the licensee fifteen days' notice of such revocation.

(viii) The premises for which the license is granted shall be open to inspection by an officer of the Excise Department not below the rank of an Assistant Inspector and the Inspector shall be furnished with such information regarding the quantity of spirit used as may be required by him.

(ix) An inspection note-book with pages numbered consecutively shall be maintained for the use of Inspecting Officers and shall be handed over to the Inspector of the Range or to any other officer authorised by him to receive it on a receipt being given therefor.

(x) Every bottle, jar and cask containing Denatured/Methylated Spirit received into or kept for storage or sale shall be conspicuously labelled with a label showing the place of its manufacture.

(xi) Licensees shall be bound by any additional rules that may be prescribed by the Excise Commissioner or Government from time to time.

(xii) In case of breach of any of the conditions of a license it shall be competent to the Deputy Commissioner to impose a fine not exceeding Rs. 50 for every such breach or to cancel the license forthwith. The imposition of a fine or cancellation of a license shall not be held to prevent the licensee from being prosecuted under the Mysore Excise Regulation.

14. *Issues from the Distillery.*—For the issue of denatured spirits from the Distillery to Bonded Depots the rules applicable to arrack and other country spirits shall apply mutatis mutandis.

15. *Materials for denaturation of spirits.*—Materials intended for use in the denaturation of spirits must be delivered by the manufacturers to the charge of the Distillery Officer who will take a sample from each separate cask or parcel thereof and forward the same to the Excise Commissioner in Mysore for transmission to the Chemical Examiner and will secure the bulk under a lock in a separate secure room or godown to be provided by the manufacturers. No portion of such bulk shall be used for the purpose of denaturation or be transferred to the warehouse until the receipt of the Chemical Examiner's report. On receipt thereof, if it be to the effect that the materials are not suitable for use in denaturation, the officer shall deliver the same to the manufacturers who shall forthwith remove the same from the premises and shall not bring them back again. If however,

the Chemical Examiner's report is to the effect that the materials are suitable for denaturation, the officer will cause them to be removed into and to be secured in the Distillery Warehouse, and at the same time enter them in the Register M. S.-4.

16. *Register of Denaturation of Spirits.*—A register in the Form D. S. 6 shall be maintained at the Government Central Distillery at Bangalore.

17. *Cost of analysis.*—The cost of all analysis made under these rules shall be borne by Government.

By Order,
B. SRINIVASA IYENGAR,
Secretary to Government,
Financial Department.

APPENDIX I.

I. SPECIFICATION OF WOOD-NAPTHAS.

The wood naptha must be sufficiently impure to impart to the Methylated Spirits, prepared by mixing one part of the wood-naptha with nine parts of spirits of wine which has such an amount of nauseousness as will, in the opinion of the Government Chemist, render such mixture incapable of being used as a beverage, or of being mixed with potable spirits of any kind without rendering them unfit for human consumption.

Wood-naptha submitted for approval should conform to the following tests:—

(*a*) Not more than 30 c.c. of the naptha should be required to decolourize a solution containing 0·5 gram of bromine.

(*b*) The naptha, which must be neutral or only slightly alkaline to litmus, should require at least 5 c.c. of deci-normal acid to neutralize 25 c.c. of the spirit when methyl orange is used as the indicator.

It should contain:—

(*a*) Not less than 72 per cent by volume of methyl alcohol.

(*b*) Not more than 12 grams per 100 c.c. of acetone, aldehydes and higher ketones, estimated as "Acetone" by the formation of iodoform according to Messinger's method.

(*c*) Not more than 3 grams per 100 c.c. of esters, estimated as methylacetate by hydrolysis.

The following details of the manner in which the above tests are conducted in the Government Laboratory are published for the information of the Trade:—

BROMINE DECOLOURIZATION.

A standard bromine solution is made by dissolving 12·406 grams of pottassium bromide and 3·481 grams of pottassium bromate in a litre of recently boiled distilled water.

Fifty c.c. of this standard solution (=0·5 gram bromine) are placed in a flask of about 200 c.c. capacity, having a well ground stopper. To this is added 10 c.c. of dilute sulphuric acid 1 (in 4) and the whole shaken gently. After standing for a few minutes the wood naptha is slowly run from a burette into the clear brown solution of bromine until the latter is completely decolourized. Not more than 30 c.c. of the wood-naptha should be required for this purpose.

METHYL ORANGE ALKALINITY TEST.

The naptha should be faintly acid to phenolphthanein, slightly alkaline or neutral, rarely acid to litmus, and always alkaline to methyl orange 25 c.c. of the wood naptha are placed in each of two beakers and titrated with deci-normal acid using in the one case a few drops of litmus solution, and in the other of a solution of methyl orange as indicator. With litmus usually 0·1 to 0·2 c.c. of deci-normal acid is required to neutralise. With methyl orange the total alkalinity should be greater at least 5 or 6 c.c. of deci-normal acid being required for neutralization.

The total alkalinity, less that given with litmus, is the "methyl orange alkalinity," and, for the 25 c.c. of wood spirit, should not be less than is required to neutralise 5 c.c. of deci-normal acid.

ESTIMATION OF METHYL ALCOHOL.

Twenty-two grams of coarsely powdered iodine and 5 c.c. of distilled water are placed in a small flask and cooled by immersion in ice cold water. The 5 c.c. of the wood spirit (60·0 o.p.) are added, the flask corked, the contents gently shaken, and allowed to remain in the ice-cold bath for 10-15 minutes.

When well cooled, 2 grams of red phosphorus are added to the mixture of spirit and iodine in the flask, and the latter is immediately attached to a reflux condenser.

The reaction soon commences, and must be moderated by dipping the flask into a cold water bath. (Spirit may be lost if the reaction is too violent.) After about 15-20 minutes, when all action appears to have ceased, the water bath under the flask is gradually heated to a temperature of about 75° C (167° F) and the flask being occasionally shaken is allowed to remain at this temperature for 15-20 minutes. The source of heat is then removed and the apparatus left for an hour till it has cooled, when the condenser is reversed, and the methyl iodine slowly distilled off—first at a low temperature the bath being allowed to boil towards the end of the operation only. The end of the condenser dips into water in a measuring tube and the iodide is collected under water and measured at a temperature of 15·5° C (60° F.)

The percentage (by volume) is found from the formula :—

$$\frac{\text{c.c. methyl iodile found} \times 647 \times 100}{\text{c.c. wood spirit taken}} = \text{Percentage (by volume) of methyl alcohol.}$$

Or when 5 c.c. of spirit are taken :—

c.c. Methyl iodide × 12·94 = Percentage (by volume.)

Esters, acetals, etc., also yield methyl iodide by this process, and from the percentage of methyl alcohol calculated as above an amount equivalent to the percentage of these substances present must be deducted. Practically, however, methyl acetate is the only compound usually found in quantity sufficient to materially affect the result. The grams of methyl acetate per 100 c. c. of spirit multiplied by ·5405 give the equivalent of methyl alcohol to be deducted from the total percentage by volume calculated from the methyl iodide found.

THE ACETONE REACTION.

Twenty-five c.c. of normal soda are placed in a flask similar to those used in the bromine reaction. To this is added 0·5 c. c. of the naptha. The mixture is well shaken, and allowed to stand 5-10 minutes. Into it from a burette n/5 iodine solution is run slowiy, drop by drop, vigorously shaking all the time till the upper portion of the solution, on standing a minute, becomes quite clear. A few c. c. more of n/5 iodine solution are added, as to get concordant results, an excess of at least 25 per cent of the iodine required must be added. After shaking, the mixture is allowed to stand for 10-15 minutes, and then 25 c. c. normal sulphuric are added. The excess of iodine is liberated, titrated with n/10 sodium thiosulphate solution and starch, and half the number of c. c. of thiosulphate solution used are deducted from the total number of c. c. of iodine solution used. The difference gives the amount of acetone by weight in the naptha by the formula :—

c. c. n/5 iodine solution required x ·3876 = grams of acetone per 100 c. c. of wood naptha.

This includes as acetone any aldehydes, etc., capable of yielding iodoform by the reaction.

If the quantity of "acetone" is excessive, a less quantity of the spirit is taken, or 10 c.c. are diluted with 10 c. c. of methyl alcohol free from acetone, and 0·5 c. c. of the mixture is used.

ESTIMATION OF ESTERS.

Five c.c. of the wood naptha are run into a silver pressure flask of about 150 c.c. capacity together with 20 c.c. of recently boiled distilled water. Ten c. c. of normal soda solution are added the flask securely closed and digested for at least two hours in a water bath at 100°C. (212°F.) The contents are then washed into a beaker, and titrated with normal acid and phenolphthalein. The difference between the number of c. c. of soda taken and of the acid required for neutralization may be calculated as methyl acetate (weight in volume) from the formula :—

$$\frac{\text{·074 x c. c. soda required x 100}}{\text{c. c. naptha taken.}} = \text{grams per 100 c. c.}$$

or if 5 c. c. of spirit are taken as above :—

1·48 x c. c. soda required = grams of methyl acetate per 100 c. c. of spirit.

II. SPECIFICATION OF PYRIDINE BASES.

1. *Colour.*—The colour must not be darker than that given by two cubic centimetres of decinormal iodine solution dissolved in one litre of distilled water.

2. *Miscibility with water.*—Twenty c. c. of the pyridine bases should give a clear mixture with 40 c. c. water : or else a mixture only so slightly opalescent that, after standing for five minutes, ordinary newspaper type is clearly visible through a layer 15 c. m. deep.

3. *Amount of water present.*—From 20 c. c, of the pyridine bases mixed with 20 c. c. of caustic soda solution (density 1·4) at least 18·5 c. c. of the bases should separate, after having been repeatedly shaken together and allowed to stand.

4. *Titration.*—Dissolve 1 c. c. of the pyridine bases in 10 c. c. of distilled water. Titrate with normal sulphuric acid until a drop of the mixture gives a definite blue spot on congo red-paper (the blue colour should at once disappear). At least 10 c. c. of the normal sulphuric acid should be required to produce this reaction. (To prepare the congo red-paper desolve one gram of congo red in one litre of distilled water. Soak filter paper in this and then dry).

5. *Cadmium Chloride Reaction.*—Vigorously shake together 10 c. c. of a solution of 1 c. c. of pyridine bases in 100 c. c. of distilled water with 5 c. c. of a 5 per cent solution of dry fused cadmium chloride. A distinct crystalline precipitate should immediately result.

6. *Boiling point.*—Distil 100 c. c. of the pyridine bases in the manner described below. At least 90 per cent should distil over at or under 140° C.

Method.—100 c. c. of pyridine bases are placed in a short necked copper flask of about 200 c. c. capacity. The flask is arranged on an asbestos card which has a circular hole of 30 m. m. diameter cut in it. To the flask is attached a fractionating column (consisting of a tube 13 m. m. wide and 170 m. m long, provided with one bulb) of which the side-tube (issuing 1 c. m. above the bulb) joins a Liebig's condensor of which the cooled part is at least 400 m. m. long. A standard thermometer is placed in the head of the column so that its bulb occupies the centre of the bulb of the column.

The speed of distillation is adjusted to 5 c. c. per minute, the distillate being received in a graduated glass cylinder. At least 90 c. c. should distill over at or under 140° C. at a barometric pressure of 760 m. m.

If the barometer varies from 760 m. m. a correction of 1° C. for each 30 m. m. of variation should be applied (*e.g.* under 770 m. m. of pressure 90 c. c. of distillate should come over at or under 140. 3° C. whilst under 750 m. m. the same amount of distillate should come over at 139. 7° C).

Note.—Pyridine proper is a single definite compound $C_5 H_5 N$. boiling at about 116° C. Pyridine bases are mixtures of pyridine with closely allied compounds boiling at various temperatures. They are cheaper and more effective denaturants than the pure pyridine.

D. S. 1.

APPENDIX 2.

License for the sale of denatured spirit.

I, Deputy Commissioner of
hereby license you to sell
denatured spirit at your shop at
during the year ending 30th June 192 , subject to the following conditions to be observed by you.

Conditions.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by Government from time to time.

2. The license extends only to the sale of denatured spirit, which means spirit which s been rendered effectually unfit for human consumption by the admixture of wood-naptha nd pyridine bases in accordance with the rules prescribed on the subject.

3. The licensee may procure his supplies of denatured spirit from any Bonded Depot, payment of cost of carriage and price as may be fixed from from time to time. He may also obtain his supplies of denatured spirit either by direct importation or by purchase from the holder of a license in From D. S. I.

4. The quantity possessed at any one time under this license shall not exceed*

Dated, the day of 192 .

Deputy Commissioner.

*(To be filled in by the Deputy Commissioner according to circumstances.)

D. S. 2.

APPENDIX 3.

License for possession and use of Denatured Spirit by varnish makers and others.

I, Deputy Commissioner of
hereby license you residing at
to possess denatured spirit for use in the manufacture of
duriug the year ending 30th June 192 , subject to the following conditions to be observed by you.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by Government from time to time.

2. The license extends only to the possession and use of and not to the sale of denatured spirits, *i.e.*, spirit rendered effectually unfit for human consumption by the admixture of wood-naptha and pyridine bases, in accordance with the rules prescribed on the subject.

3. The licensee may procure his supplies of denatured spirit from any Bonded Depot, on payment of cost of carriage and price as may be fixed from time to time. He may also obtain his supplies of denatured spirit either by direct importation or by purchase from the holder of a license in Form D. S. 2.

4. The quantity possessed at any one time under the license shall not exceed*

Dated the day of 192 .

*(To be filled in by the Deputy Commissioner according to circumstances.)

Deputy Commissioner.

D. S. 3. APPENDIX 4.

License for the possession and sale of Methylated Spirit by Chemists and others.

I, , Deputy Commissioner of hereby license you residing at to posses and sell Methylated Spirit during the year ending 30th June 192 , subject to the following conditions to be observed by you.

Conditions.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by the Government from time to time.

2. The license extends only to the possession and use of methylated spirit, *i.e.*, spirit rendered effectually unfit for human consumption by the admixture of wood-naptha in accordance with the rules prescribed on the subject in the preparation of medical compounds for which such spirit is prescribed and to the sale of the same up to a maximum of one reputed quart at a time.

3. The licensee may procure his supplies by importation with the special sanction of the Government in each case or from the Government Central Distillery where methylated spirit specially manufactured are available in quantities not exceeding 20 gallons at a time.

4. The quantity to be possessed at any one time under this license is limited to 25 gallons.

Dated the day of

Deputy Commissioner.

D. S. 4. APPENDEX 5.

Pass for the $\frac{\text{import or}}{\text{export or}}{\text{transport}}$ of $\frac{\text{denatured}}{\text{methylated}}$ spirit.

.....is herby permitted to $\frac{\text{import}}{\text{export}}{\text{transport}}$ gallons of $\frac{\text{denatured}}{\text{methylated}}$ spirit from

to Date issuing Officer.

N.B.—This permit shall be in triplicate. One copy shall be retained in the office of issue, one given to the importer, exporter or transporter and the third copy sent in the case of export to the Excise Officer of the District of destination and in the case of issue from the Bonded Depot to the Inspector of the Range to which the spirit is consigned.

D. S. 5. APPENDIX 6.

Nature of license and number.
Name of licensee.
Station.

Account to be maintained by holders of lecenses for the sale or for possession and use of denatured or methylated spirits.

Date	Opening balance	Quantity received	Source of supply	Total quantity in hand and received	Quantity sold to purchasers within the State or used or issued. (Each transaction)	Quantity sold to purchasers outside the State (each) transaction)	Name of purchaser	Address of purchaser or name of station to which issued.	Total quantity sold, used or issued each day	Remarks
	G. Q.	G. Q.		G. Q.	G. Q.	G. Q.			G. Q.	

Note.—Holders of licenses in From D. S. 2. need not fill in column 6 to 9.
Do D. S. 3. do 7 and 9.

D. S. 6. APPENDIX 7.

Register of denaturation in the.....Distillery.

Denaturation of materials							Spirits denatured			Remarks
Date	Description	Unit	In hand	Received	Total in hand and received	Used	Vat No.	Quantity	Strength	Here enter whence materials received, number and date of Chemical Examiner's reply, authority for denaturation, etc.
1	2	3	4	5	6	7	8	9	10	11